REMARKS

Applicants appreciate the time taken by the Examiner to review Applicants' present application. This application has been carefully reviewed in light of the Official Action mailed June 29, 2007. Applicants respectfully request reconsideration and favorable action in this case.

Rejections under 35 U.S.C. § 103

Claims 1-4,8,10, 13-15, 18-22, 25-28, 31-34, and 37 stand rejected under 35 U.S.C. 103(a) as being anticipated by Sundaralingam (WO 03/032593 Al), hereinafter referred to as Reference A in view of Sahlin et al. (U. S. Patent No. 2004/0156448). The Examiner states:

> Regarding claim 1, Reference A discloses a method (Fig. 2, page 2, line 17-page 3, line 20) to identify a modulation format (8psk or GMSK) of a data frame received from a servicing base station by a mobile station in a cellular wireless communication system, the method comprises:
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> receiving (Fig. 2, page 2, line 17-page 3, line 20 and page 10, lines 16-20) a first Radio Frequency (RF) burst of the data frame from the servicing base station, wherein the first RF burst carries a plurality of modulated symbols;
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> extracting (page 8, line 5-page 9, line 6 and column 10, lines 13-20) a training sequence from the first RF burst using a channel estimator, wherein the training sequence comprises modulated symbols;
>
> processing (Fig. 2, blocks 14, 16, 18, and 20, page 8, line 5-page 9, line 6 and column 10, lines 13-20) the training sequence assuming a first modulation format (GMSK modulation and correlation) to produce a first channel energy (page 3, lines 1-20);
>
> processing (Fig. 2, blocks 24, 16, 18, and 20, page 8, line 5-page 9, line 6 and column 10, lines 13-20) the training sequence assuming a second

modulation format (8PSK modulation and correlation) to produce a second channel energy (page 3, lines 1-20);

determining (Fig. 2, block 22, page 3, lines 1-20) a greater channel (impulse response) energy from the first channel energy and the second channel energy; and

identifying (Fig. 2, block 22, page 3, lines 1-20) the modulation format (8psk or GMSK) of the first RF burst as corresponding to the greater channel (impulse response) energy.

Reference A does not disclose receiving a subsequent RF burst within the data frame from the servicing base station, wherein the subsequent RF burst carries a plurality of modulated symbols;

processing the training sequence assuming the first modulation format to produce a subsequent first channel energy (page 3, lines 1-20);

accumulating the subsequent first channel energy with the first channel energy to produce an accumulated first channel energy (accumulated tap energies);

processing the training sequence assuming the second modulation format to produce a subsequent second channel energy (column 3, lines 1-20);

accumulating the subsequent second channel energy with the second channel energy to produce an accumulated second channel energy;

determining a greater accumulated channel energy from the first accumulated channel energy and the second accumulated channel energy; and

identifying the modulation format of the subsequent RF burst as corresponding to the greater accumulated channel energy.

However, Sahlin et al. discloses a method of detecting a modulation format (8PSK or GMSK) which involves generating quality measures (channel energies) to detect the modulation format (sections 0041-0044). Sahlin et al. further discloses performing quality measurements on training signals (section 0047). Sahlin et al. also discloses the quality measurements are performed for all subsequent bursts in a received block (section 0075) to determine a total (accumulated) quality measurement for detection of the modulation format (section 0075). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to perform the identification procedure as disclosed by Reference A for multiple or subsequent bursts as taught by Sahlin et al. since Sahlin states that averaging (accumulating) the quality measures (channel energies) over multiple bursts increases the reliability of the detection (identification) (see section 0074).

Regarding claim 2, which inherits the limitations of claim 1, Reference A discloses processing the training sequence assuming the first modulation format to produce the first channel energy further comprises derotating the symbols within the training sequence; and processing the training sequence assuming the second modulation format to produce the second channel energy further comprises derotating the symbols within the training sequence (Fig. 2, blocks 14 and 24, page 10, lines 13-20), wherein the signals are derotated by the rotation angle.

Regarding claim 3, which inherits the limitations of claim 2, Reference A discloses the first modulation format is GMSK; and the second modulation format is 8PSK (Fig. 2).

Regarding claim 4, which inherits the limitations of claim 1, Reference A discloses extracting further comprises: processing the first RF burst to produce a baseband signal; and extracting the training sequence from the baseband signal (page 8, lines 5-page 9, line 6), wherein the demodulation produces a baseband signal and the training sequence is extracted and stored to perform correlation to produce the channel impulse response.

Regarding claim 8, Reference A discloses a method to identify a modulation format of a data frame transmitted between a servicing base station and a wireless terminal in a cellular wireless communication system, the method comprises:

receiving (Fig. 5 and 6, page 8, line 5-page 9, line 6, and page 10, lines 16-20) a first Radio Frequency (RF) burst of the data frame from the servicing base station, wherein the first RF burst carries a plurality of modulated symbols;

extracting (Fig. 5, block 58, page 8, line 5-page 9, line 6) a training sequence from the first RF burst, wherein the training sequence comprises modulated symbols;

producing (Fig. 5, block 60, page 8, line 5-page 9, line 6) a first channel estimate based on the training sequence assuming a first modulation format (GMSK);

applying (Fig. 6, block 68, page 10, line 12-page 11, line 11) the first channel estimate to a reference training sequence of the first modulation format to produce a first reconstructed training sequence (rel);

comparing the (Fig. 6, blocks 70, 72, and 74, page 10, line 12-page 11, line 4 and page 12, lines 4-14)) training sequence to the first reconstructed training sequence to produce a first error magnitude result (noise variance);

producing (Fig. 5, block 60, page 8, line 5-page 9, line 6) a second channel estimate based on the training sequence assuming a second modulation format (8PSK);

applying (Fig. 6, block 68, page 10, line 12-page 11, line 11) the second channel estimate to a reference training sequence of the second modulation format to produce a second reconstructed training sequence;

comparing (Fig. 6, block 70, page 10, line 12-page 11, line 4 and page 12, lines 4-14) the training sequence to the second reconstructed training sequence to produce a second error magnitude result (noise variance); and

identifying the modulation format of the first RF burst as the one corresponding to the smaller error magnitude (Fig. 5, block 86, page 12, lines 18-22).

Reference A does not discloses receiving a subsequent RF burst data frame from the servicing base station, wherein the subsequent RF burst carries a plurality of modulated symbols;

processing the training sequence assuming the first modulation format to produce a subsequent first error magnitude;

accumulating the subsequent first error magnitude with the first error magnitude to produce an accumulated first error magnitude;

processing the training sequence assuming the second modulation format to produce a subsequent second error magnitude;

accumulating the subsequent second error magnitude with the second channel energy to produce an accumulated second error magnitude;

determining a smaller accumulated error magnitude from the first accumulated error magnitude and the second accumulated error magnitude; and

identifying the modulation format of the subsequent RF burst as corresponding to the smaller accumulated error magnitude.

However, Sahlin et al. discloses a method of detecting a modulation format (8PSK or GMSK) which involves generating quality measures such as signal-to-noise ratios (which respresent an error magnitude) to detect the modulation format (sections 0041-0044). Sahlin et al. further discloses perfoming quality measurements on training signals (section 0047). Sahlin et al. also discloses the quality measurements are performed for all subsequent bursts in a received block (section 0075) to determine a total (accumulated) quality measurement for detection of the modulation format (section 0075). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to perform the identification procedure as disclosed by Reference A for multiple or subsequent bursts as taught by Sahlin et al. since Sahlin states that averaging (accumulating) the quality measures over multiple bursts increases the reliability of the detection (identification) (see section 0074).

Regarding claim 10, which inherits the limitations of claim 9, Reference A further discloses the first modulation format is GMSK; and the second modulation format is 8PSK (Fig. 5).

Regarding claims 13-15, Reference A further discloses the limitations of claims 13-15 (see claims 1-3), including the method of claims 13-15 (see claims 1-3) performed in a wireless terminal (Fig. 1, block 8 and Fig. 9, page 1, line 11-page 2, line 16) that comprises an RF front end (Fig. 8, blocks 100, and 102); a baseband processor communicatively coupled to the RF front end (Fig. 8, blocks 104, 106, and 108); and a CODEC processing module communicatively coupled

to the baseband processor (Fig. 8, block 110, page 2, lines 2-16), wherein the receiver is a GPRS receiver which allows coding/decoding as described herein.

Regarding claim 18, which inherits the limitations of claim 13, Reference A further discloses the wireless terminal operates according to GSM standard (page 1, line 11-page 2, Iinel6 and page 8, lines 5-15).

Regarding claims 19-22, Reference A further discloses the limitations of claims 19-22 (see claims 1-4), including the method of claims 19-22 (see claims 1-4) performed in a wireless terminal (Fig. 1, block 8 and Fig. 9, page 1, line 11-page 2, Iinel6) that comprises an RF front end (Fig. 8, blocks 100, and 102); a baseband processor communicatively coupled to the RF front end (Fig. 8, blocks 104, 106, and 108).

Regarding claim 25, which inherits the limitations of claim 19, Reference A further discloses the wireless terminal operates according to GSM standard (page 1, line 11-page 2, line 16 and page 8, lines 5-15).

Regarding claims 26-28, Reference A further discloses the limitations of claims 26-28 (see claims 8 and 10), including processing the first RF burst to produce a baseband signal; and extract the training sequence from the baseband signal (page 8, lines 5-page 9, line 6) wherein the method of claims 26-28 are performed in a wireless terminal (Fig. 1, block 8 and Fig. 9, page 1, line 11-page 2, line 16) that comprises an RF front end (Fig. 8, blocks 100, and 102); a baseband processor communicatively coupled to the RF front end (Fig. 8, blocks 104, 106, and 108); and a CODEC processing module communicatively coupled to the

baseband processor (Fig. 8, block 110, page 2, lines 2-16), wherein the receiver is a GPRS receiver which allows coding/decoding as described herein.

Regarding claim 31, which inherits the limitations of claim 26, Reference A further discloses the wireless terminal operates according to GSM standard (page 1, line 11 -page 2, line 16 and page 8, lines 5-15).

Regarding claims 32-34, Reference A further discloses the limitations of claims 32-34 (see claims 8 and 10), including processing the first RF burst to produce a bas seband signal; and extract the training sequence from the baseband signal (page 8, lines 5-page 9, line 6) wherein the method of claims 32-34 are performed in a wireless terminal (Fig. 1, block 8 and Fig. 9, page 1, line 11-page 2, line 16) that comprises an RF front end (Fig. 8, blocks 100, and 102); and a baseband processor communicatively coupled to the RF front end (Fig. 8, blocks 104, 106, and 108).

Regarding claim 37, which inherits the limitations of claim 32, Reference A further discloses the wireless terminal operates according to GSM standard (page 1, line 11-page 2, line 16 and page 8, lines 5-15).

The applicant respectfully submits that the present invention as amended in the independent claims can be distinguished from Sundaralingam in that the present invention receives a subsequent RF burst within the data frame and then determines the modulation format of the data frame based on the accumulated channel energy or accumulated error result. Thus, the present invention may determine the modulation format associated with the data frame (or series of RF bursts) over more than one RF burst. Sundaralingam does not accumulate channel energy or error results over more than one RF burst, rather Sundaralingam will accumulate channel energy over a single training sequence (i.e. single RF burst).

The present invention may examine and accumulate channel energies over more than one training sequence by accumulating the channel energies associated with each modulation format over a series of RF bursts within a data frame. Thus, the present invention is able to examine the overall accumulated energy for a series of training sequences contained within a series of RF bursts within a data frame to determine the modulation format associated with the series of RF bursts within the data frame. Sundaralingam determines the modulation format associated with individual RF bursts and fails to teach or suggest that a series of RF bursts can be examined in order to determine the most likely modulation format associated with the series or that the entire data frame be processed in that matter. In fact Sahlin specifically teaches that the bursts may only be processed based on the quality measures of the current and prior bursts. (See paragraph 74) The present invention allows the bursts to be processed on the entire data frame. Sahlin, only allows this for the final burst.

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Sundaralingam with Sahlin. Therefore, the rejection on a combination of these references is inappropriate.

The applicant respectfully submits that the independent claims have each been previously amended to more clearly state that subsequent RF bursts are received and processed to determine these accumulated results. For example, Claim 1, incorporates many of the limitations previously contained within dependent claim 5; Claim 8 incorporates similar limitations from Claim 9; Claim 13 incorporates similar limitations from Claim 16; Claim 19 incorporates similar limitations from Claim 23; Claim 26 incorporates similar limitations from Claim 29; and Claim 32 incorporates similar limitations from Claim 35. Sundaralingam fails to teach that the accumulation of such results over a number of training sequences (i.e. RF bursts) may be used to determine the modulation format of the received RF bursts. Sahlin specifically teaches that the current bursts may only be processed based on the quality measures of the current and prior bursts subsequent bursts may not be used. (See paragraph 74) The present invention allows the bursts to be processed on the entire data frame. Sahlin, only allows this for the final burst.

Applicant, therefore, respectfully requests the Examiner to reconsider and withdraw the rejection to allow Claim 1-5, 8-10, 13-15, 18-22, 25-28, 31-34, and 37.

Claims 5-7 11,12,16,17,23,24,29, 30,35, and 36 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Sundaralingam (previously cited in Office Action 8/8/2005), hereinafter referred to as Reference A in view of of Sahlin et al. (U. S. Patent No. 2004/0156448) as applied to Claims 1-4, 8,10,13-15,18-22,25-28, 31-34, and 37, and in further view of Khullar et al. (previously cited in Office Action 8/8/2005). The examiner states:

> Regarding claims 5-7, 11, 12, 16, 17, 23, 24, 29, 30, 35, and 36, Reference A and Sahlin et al. disclose all the limitations of claims 6, 7, 11, 12, 16, 17, 23, 24, 29, 30, 35, and 36 (see above rejection of claims 1-4, 8-10, 13-15, 18-22, 25-28, 31-34, and 37) except comparing the identified modulation format of the subsequent RF burst to the identified modulation format of previous RF bursts of the data frame; demodulating the subsequent RF burst according to the identified modulation format of the subsequent RF burst; and discarding the prior RF bursts of the data frame when the identified modulation format of the subsequent RF burst compares unfavorably to the identified modulation format of prior RF bursts or reprocessing the prior RF bursts of the data frame according to the identified modulation format of the subsequent RF burst when the identified modulation format of the subsequent RF burst (of previous data frames) compares unfavorably to the identified modulation format of the prior RF burst.
>
> Khullar et al. discloses a very similar method/apparatus for receiving RF burst and for determining a modulation scheme (GMSK or 8PSK) which includes generating channel energies (through channel estimation) and comparing the energies (highest energy to detect the modulation scheme (Fig. 4, column 8, lines 24-67). Khullar et al. also discloses comparing the identified modulation format of

the subsequent RF burst to the identified modulation format of previous RF bursts of the data frame (column 9, lines 17-30); demodulating the subsequent RF burst according to the identified modulation format of the subsequent RF burst (column 9, lines 1-17); and discarding (setting soft values to zero) the prior RF bursts of the data frame when the identified modulation format of the subsequent RF burst compares unfavorably to the identified modulation format of prior RF bursts (column 9, lines 42-57) or reprocessing (converting) the prior RF bursts of the data frame according to the identified modulation format of the subsequent RF burst when the identified modulation format of the subsequent RF burst compares unfavorably to the identified modulation format of the prior RF burst (column 9, lines 17-30). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the method/apparatus of Reference A and Sahlin et al. with the teachings of Khullar et al. in order ensure that information received from unreliable bursts (bursts which compare unfavorably to the identified modulation format of prior RF bursts) does not have an adverse effect on the subsequent signal processing (Khuller et al., column 9, lines 42-57).

The applicant respectfully submits that the present invention as amended in the independent claims can be distinguished from Sundaralingam in that the present invention receives a subsequent RF burst within the data frame and then determines the modulation format of the data frame based on the accumulated channel energy or accumulated error result. Thus, the present invention may determine the modulation format associated with the data frame (or series of RF bursts) over more than one RF burst. Sundaralingam does not accumulate channel energy or error results over more than one RF burst, rather Sundaralingam will accumulate channel energy over a single training sequence (i.e. single RF burst).

The present invention may examine and accumulate channel energies over more than one training sequence by accumulating the channel energies associated with each modulation format over a series of RF bursts. Thus, the present invention is able to examine the overall accumulated energy for a series of training sequences contained within a series of RF bursts to determine the modulation format associated with the series of RF bursts. Sundaralingam determines the modulation format associated with individual RF bursts and fails to teach or suggest that a series of RF bursts can be examined in order to determine the most likely modulation format associated with the series.

Sundaralingam and Sahlin, for the reasons stated above, fail to teach that the accumulation of such results over a number of training sequences (i.e. RF bursts) may be used to determine the modulation format of the received RF bursts. Applicant, therefore, respectfully requests the Examiner to reconsider and withdraw the rejection to allow Claim 1-5, 8-10, 13-15, 18-22, 25-28, 31-34, and 37.

Applicant respectfully points out that in order to combine references for an obviousness rejection, there must be some teaching, suggestion or incentives supporting the combination. *In re Laskowski*, 871 F.2d 115, 117, 10 U.S.P.Q. 2d 1397, 1399 (Fed. Cir. 1989). The mere fact that the prior art could be modified does not make that modification obvious unless the prior art suggests the desirability of the modification. *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). In addition, it is well established that Applicant's disclosure cannot be used to reconstruct Applicant's invention from individual pieces found in separate, isolated references. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596 (Fed. Cir. 1988).

Applicant respectfully submits that there is no motivation, teaching or suggestion to combine Sundaralingam with **Khullar**. Therefore, the rejection on a combination of these references is inappropriate. Withdrawal of the rejection allowance of Claims 6, 7, 11, 12, 16, 17, 23, 24, 29, 30, 35 and 36 respectfully requested.

Applicant further submits that neither Sundaralingam or **Khullar** alone nor the combination of the two teaches or suggests make obvious the invention recited in Claims 6, 7, 11, 12, 16, 17, 23, 24, 29, 30, 35 and 36 because the cited references do not teach that subsequent RF bursts (i.e. training sequences) within a data frame are received and processed to determine accumulated channel energies or error results.

The applicant respectfully submits that the present invention as amended in the independent claims can be distinguished from Sundaralingam in that the present invention receives subsequent RF bursts within a data frame and then determines the modulation format of the data frame based on the accumulated channel energy or accumulated error result. Thus, the present invention may determine the modulation format associated with the data frame (or series of RF bursts) over more than one RF burst. Sundaralingam does not accumulate channel energy or error results over more than one RF burst, rather Sundaralingam will accumulate channel energy only over a single training sequence (i.e. single RF burst).

With respect to Khullar, the applicant respectfully submits that Khullar also fails to teach the accumulation of channel energies or error results over a series of RF bursts. Khullar rather teaches that for a set of four RF bursts a modulation scheme may be determined for each burst and then based on the modulation schemes and then "takes a majority vote and converts the selected modulation scheme for the dissimilar bursts so that it matches the majority vote." (Khullar, Column 9, Line 17-30. The applicant respectfully submits that this majority vote differs significantly from the accumulation of channel energies or error results associated with that may be accumulated over a series of RF bursts. For example using RF bursts having channel energies or error results that marginally differ to select the modulation format of the data frame fails to consider and weigh the marginal differences between channel energies or error results. Rather, these marginal results are considered in an all or nothing majority vote. Accumulating the channel energies or error results over the series of RF bursts will give greater weight to those RF bursts where a clear difference exists and lesser weight to those RF bursts where only marginal differences exist. Thus, the claimed invention may yield different results when compared to the processes taught in Sundaralingam or **Khullar.**

The applicant respectfully submits that the independent claims have each been amended to more clearly state that subsequent RF bursts are received and processed to determine these accumulated results. For example, Claim 1, incorporates many of the limitations previously contained within dependent claim 5; Claim 8 incorporates similar limitations from Claim 9; Claim 13 incorporates similar limitations from Claim 16; Claim 19 incorporates similar limitations from Claim 23; Claim 26 incorporates similar limitations from Claim 29; and Claim 32 incorporates similar limitations from Claim 35. Sundaralingam fails to teach that the

accumulation of such results over a number of training sequences (i.e. RF bursts) may be used to determine the modulation format of the received RF bursts.

Claims 6, 7, 11, 12, 16, 17, 23, 24, 29, 30, 35 and 36 depend from these amended independent Claims, and are patentably distinct as further limitations upon these independent Claims. Applicant, therefore, respectfully requests the Examiner to reconsider and withdraw the rejection to allow Claims 6, 7, 11, 12, 16, 17, 23, 24, 29, 30, 35 and 36.

Conclusion

Applicants have now made an earnest attempt to place this case in condition for allowance. For the foregoing reasons and for other reasons clearly apparent, Applicants respectfully request full allowance of Claims1-8 and 10-37.

The Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 50-2126 of Garlick Harrison & Markison, LLP.

Respectfully submitted,

[redacted]

By:____________________________

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